

> THE PATIENT

78-year-old woman

> SIGNS & SYMPTOMS

- Subacute polyarticular arthralgias
- Swelling of the ankles and right knee
- Recent travel to the Dominican Republic

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> THE CASE

A 78-year-old woman with a history of anxiety and hypertension presented to our family medicine residency practice in Massachusetts with subacute polyarticular arthralgias that had been present for 2 months. She complained of pain and swelling of both ankles and the right knee. She noted that her symptoms had started on a recent trip to the Dominican Republic, where she developed generalized joint pain and a fever that lasted 1 to 2 weeks and subsequently resolved with the lingering polyarthralgias. She denied any rash, constitutional symptoms, photosensitivity, headaches, photophobia, or history of tick bite. Physical examination revealed normal vital signs, notable warmth and swelling of the bilateral ankles that was worse on the right side, and swelling of the right knee with effusion—but no tenderness—to palpation.

THE DIAGNOSIS

The patient's labwork revealed a white blood cell count of 5900/mcL (reference range, 4500–11,000/mcL), hemoglobin count of 12.5 g/dL (reference range, 14–17.5 g/dL), and a platelet count of 230×10^3 /mcL. Electrolytes and renal function were normal. She had an elevated erythrocyte sedimentation rate of 34 mm/h (reference range, 0–20 mm/h) and a positive antinuclear antibody (ANA) test, but no titer was reported. Anti-chikungunya IgG and IgM antibodies were positive on enzyme-linked immunosorbent assay (ELISA) serologic testing.

DISCUSSION

Chikungunya is an infectious disease that is relatively rare in the United States. Chikungunya was rarely identified in American travelers prior to 2006, but incidence increased over the next decade. In 2014, a total of 2811 cases were reported.¹ Chikungunya is an RNA arbovirus that is transmitted by *Aedes aegypti* and *Aedes albopictus* mosquitoes and is endemic to West Africa. Within the last 2 decades, there has been an increasing number of outbreaks in India, Asia, Europe, and the Americas, where the highest incidence is in South America, followed by Central America. In the United States, almost all reported cases of chikungunya infection have been in travelers returning from endemic areas.² The first 2 known cases of local transmission in the United States were reported in Florida in July 2014.³ Local transmission of chikungunya is significant in that it represents the possibility of a local reservoir for sustained transmission.

■ Disease presentation. Patients will initially complain of a high fever and severe distal polyarthralgias that usually are symmetric. The most common symptoms are polyarthralgias (87%–98% of patients), myalgias (46%–59%), and a maculopapular rash involving the palms and soles (40%–50%).⁴ Other associated symptoms include headaches, photophobia,

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Chikungunya virus is increasingly common in American travelers returning from tropical and subtropical regions.

and digestive symptoms. Respiratory symptoms are not present in chikungunya.⁵

The term *chikungunya* is derived from a Kimakonde (central Bantu) word meaning “that which bends up” because of the arthralgia caused by the disease. Fever usually lasts 3 to 7 days; polyarthralgia begins shortly after the onset of fever.⁴ Frank arthritis also may be present. Infection often exacerbates a previously damaged or diseased joint. Acute symptoms usually persist for 1 to 2 weeks, but arthralgias and arthritis can persist for months to years following resolution of the acute disease.⁶ In one study of 47 patients with acute chikungunya in Marseilles, France, the number of patients who were symptomatic declined from 88% to 86%, 48%, and 4% at 1, 3, 6, and 15 months, respectively.⁷

■ **The differential diagnosis** includes tropical infectious diseases (dengue, chikungunya, Zika, and leptospirosis) in patients who have recently traveled to the tropics and who complain of subacute polyarticular arthralgias or arthritis; locally acquired infections associated with arthralgia/arthritis such as Lyme disease and other tick-borne diseases and rickettsial infections; parvovirus B19 and other postinfectious arthritides; and rheumatologic conditions such as systemic lupus.

Clinical differentiation among dengue, chikungunya, and Zika may be difficult, although persistent frank arthritis is much more common in chikungunya than in dengue or Zika. Furthermore, conjunctivitis is present in Zika but is absent in chikungunya. Chikungunya also is more likely to cause high fever, severe arthralgia, arthritis, rash, and lymphopenia than Zika or dengue. Dengue is more likely to cause lymphopenia and hemorrhagic consequences than is chikungunya or Zika.⁸

In our patient, dengue titers were not obtained because the duration of symptoms was thought to be more consistent with chikungunya, but testing for dengue also would have been appropriate. If present, fever typically is low-grade in Zika and is shorter in duration than in chikungunya (approximately 2–3 days vs 5–7 days).⁹ Coinfection with chikungunya and Zika sometimes occurs because the same

mosquito species transmit both diseases.

■ **The most common test** for diagnosing acute chikungunya is ELISA serologic testing for IgM antibodies, which develop toward the end of the first week of infection; earlier in that first week, serum testing for viral RNA may be performed by polymerase chain reaction.

Treatment is largely supportive

Treatment of acute chikungunya is largely supportive and includes anti-inflammatory agents. To our knowledge, no antiviral agents have been shown to be effective. Postacute or chronic symptoms may require treatment with glucocorticoids or other immunomodulatory medications. A 2017 literature review of treatments for chikungunya-associated rheumatic disorders showed evidence that chloroquine was more effective than placebo for chronic pain relief. Also, adding a disease-modifying antirheumatic agent in combination with chloroquine was more effective for controlling pain and reducing disability than hydroxychloroquine monotherapy.¹⁰

■ **Our patient** was treated with ibuprofen only and experienced resolution of joint symptoms several months after the initial presentation. A repeat ANA test 12 months later was negative.

A 2009 review of the medical literature revealed a single case report of chikungunya associated with positive ANA.⁸ Although a positive ANA may be associated with acute viral infections, significantly elevated ANA levels typically are associated with autoimmunity. Resolution of the patient's serum ANA 1 year later suggested that the positive ANA was not secondary to a pre-existing rheumatologic condition but rather a consequence of her body's response to the chikungunya infection itself. Our case raises the hypothesis that, at least in some cases, chikungunya somehow stimulates a temporary autoimmune response, which may help explain why immunomodulatory medications can be effective treatment options.

THE TAKEAWAY

Chikungunya is increasingly common in tropical and subtropical regions. Family phy-

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sicians practicing in the United States should become familiar with the common patterns of presentation of viruses such as chikungunya, dengue, and Zika. Obtaining a travel history for patients presenting with arthritis improves the differential diagnosis and may even reveal the cause of the condition. **JFP**

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